



Features

- RoHS compliant*
- CW or CCW rotary switch
- Linear and audio tapers
- PC board and bushing mount
- Splash seal
- Metal bushing and shaft

Applications

- Test and measurement equipment
- Avionics controls
- Communications equipment
- Medical laboratory equipment

56 – Sealed 1/2" (12.5 mm) Panel Control w/Rotary Switch

Electrical Characteristics¹

| | |
|--|-----------------------|
| Standard Resistance Range | |
| Linear | 1K to 500K ohms |
| Audio | 1K to 500K ohms |
| Total Resistance Tolerance | |
| B & D Tapers | ±20 % |
| E & S Tapers | ±10 % |
| Independent Linearity | ±5 % |
| Absolute Minimum Resistance | 2 ohms maximum |
| Effective Electrical Angle | 240 ° ±5 |
| Contact Resistance Variation | ±2 % |
| Dielectric Withstanding Voltage (MIL-STD-202, Method 301) | |
| Sea Level | 1,500 VAC minimum |
| 70,000 | 500 VAC minimum |
| Insulation Resistance | 1,000 megohms minimum |
| Power Rating At 70 °C (Derate To 0 At 125 °C) | |
| (Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less) | |
| Linear Tapers | 0.5 watt |
| Audio Tapers | 0.25 watt |
| Theoretical Resolution | Essentially infinite |

Environmental Characteristics¹

| | |
|--|-------------------|
| Operating Temperature Range | +1 °C to +125 °C |
| Storage Temperature Range | -55 °C to +125 °C |
| Temperature Coefficient Over Storage Temperature Range | ±1,000 ppm/°C |
| Vibration | .8 G |
| Total Resistance Shift | ±2 % maximum |
| Voltage Ratio Shift | ±5 % maximum |
| Shock | .20 G |
| Total Resistance Shift | ±2 % maximum |
| Voltage Ratio Shift | ±5 % maximum |
| Load Life | 1,000 hours |
| Total Resistance Shift | ±10 % TRS maximum |
| Rotational Life (No Load) | 50,000 cycles |
| Total Resistance Shift | ±10 % TRS maximum |
| Contact Resistance Variation | ±2 % |
| Moisture Resistance (MIL-STD-202, Method 103, Condition B) | |
| B & E Taper | ±10 % TRS |
| D & S Taper | ±20 % TRS |
| IP Rating | |
| Entire Unit | IP64 |
| Shaft/Bushing | IP65 |

Mechanical Characteristics

| | |
|--|--|
| Stop Strength | .56 N-cm (5 lb.-in.) |
| Mechanical Angle | 290 ° ±5 ° |
| Torque | |
| Running/Starting | 0.2 to 1.3 N-cm (0.25 to 2.0 oz.-in.) |
| Mounting (Torque on Bushing) | 1.7 to 2.0 N-m (15 to 18 lb.-in.) maximum |
| Weight | 8.5 grams |
| Terminals | PC pin |
| Soldering Condition | Recommended hand soldering using Sn95/Ag5 no clean solder, 0.025" wire diameter. Maximum temperature 399 °C (750 °F) for 3 seconds. No wash process to be used with no clean flux. Part can be wave soldered at 260 °C (500 °F) for 5 seconds, no wash process with no clean flux. |
| Marking | Manufacturer's trademark, part number, resistance value and date code. |
| Ganging (Multiple Section Potentiometers and Switches) | Inquire for availability, minimum order quantity and price. |
| Hardware | Locking bushing versions are shipped with one additional locking nut (Bushing A: H-37-2 & H-38-2; Bushing C: H-37-1 & H-38-1) |

¹Electrical specifications tested at 200 RPM, at room ambient: +25 °C nominal.



WARNING
Cancer and Reproductive Harm
www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.
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56 – Sealed 1/2" (12.5 mm) Panel Control w/Rotary Switch

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Initial Electrical Characteristics - Switch

| | |
|---|-------------------------------|
| Switch Type | SPDT (Break before make) |
| Power Rating (Resistive Load) | 0.5 A @ 30 VDC |
| Dielectric Withstanding Voltage (MIL-STD-202, Method 301) | |
| Sea Level | 1000 VAC minimum |
| Insulation Resistance | 1000 megohms minimum |
| Contact Resistance | 30 milliohms maximum |
| Contact Bounce | 5 milliseconds maximum |
| Actuation Angle | 35 ° maximum |
| Switch Travel | 25 ° maximum |
| Detent Torque | 1.3 N-cm (2.0 oz.-in) nominal |

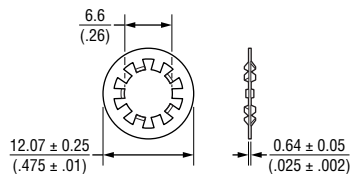
Environmental Characteristics¹

| | |
|---|--------------------------|
| Vibration | 8 G |
| Contact Resistance | 30 milliohms maximum |
| Contact Bounce | 0.1 milliseconds maximum |
| Shock | 20 G |
| Contact Resistance | 30 milliohms maximum |
| Contact Bounce | 0.1 milliseconds maximum |
| Rotational Life @ Rated Power | 50,000 cycles |
| Contact Resistance | 100 milliohms maximum |
| Moisture Resistance (MIL-STD-202, Method 103, Condition B) | |
| Contact Resistance | 30 milliohms maximum |
| Insulation Resistance (After 24 Hours @ Room Temperature - 500 VDC) | 100 megohms minimum |

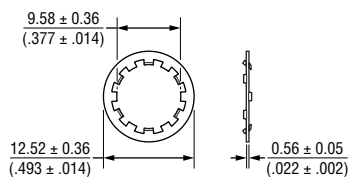
¹Electrical specifications tested at 200 RPM, at room ambient: +25 °C nominal.

Hardware

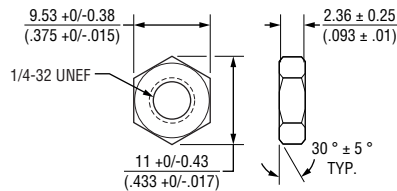
LOCKWASHER H-37-1



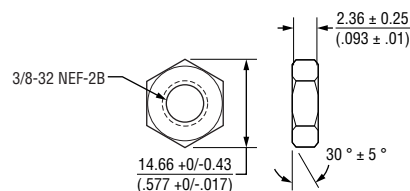
LOCKWASHER H-37-2



NUT H-38-1



NUT H-38-2



DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

Date Code Description

YY WW M

M = COUNTRY OF MANUFACTURE (MEXICO)
 WW = WEEK NUMBER
 YY = LAST TWO DIGITS OF YEAR MANUFACTURED

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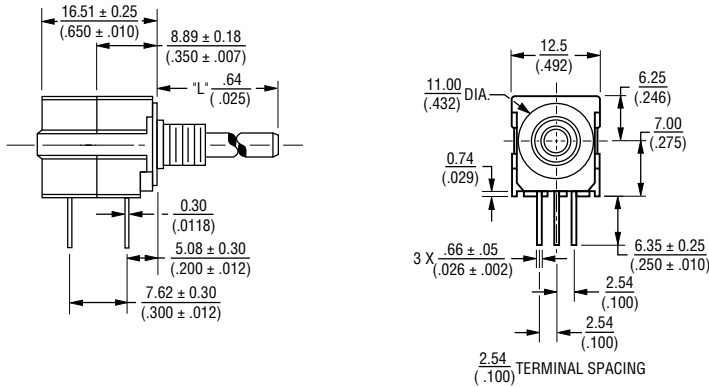
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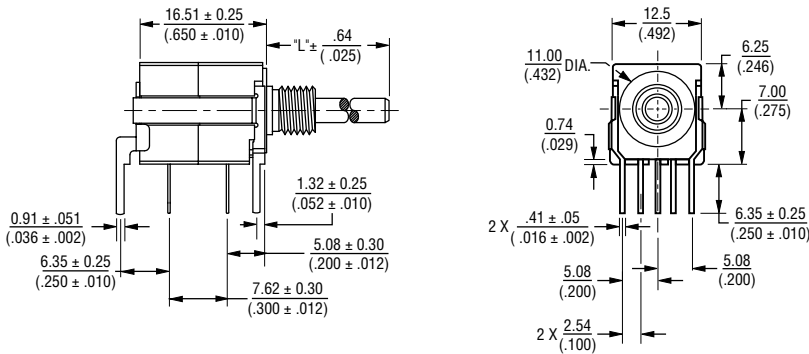
56 – Sealed 1/2" (12.5 mm) Panel Control w/Rotary Switch

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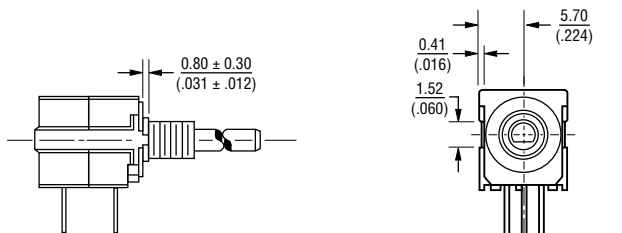
Product Dimensions



PACKAGE DIMENSIONS W/PCB MOUNTING BRACKET



ANTI-ROTATION LUG (Style "A", 90 ° CW Shown)



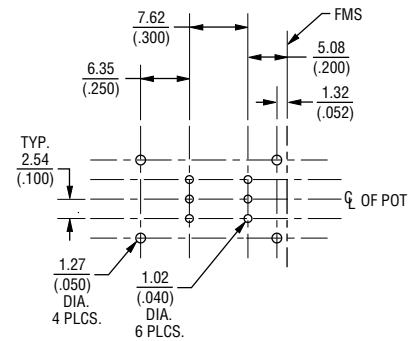
SHAFT FLAT ORIENTATION

SHAFT FLAT SHOWN AT 50 % OF MECHANICAL TRAVEL.

FOR TOLERANCES SHOWN: .XX ± .25 (.010)
.XXX ± .13 (.005)
SHAFT DIMENSIONS ± .80 (1/32)

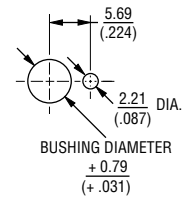
DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

Recommended PCB Layout

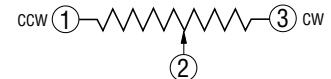


(Double Module Front and Rear Bracket Shown)

Suggested Panel Layouts



Electrical Schematic

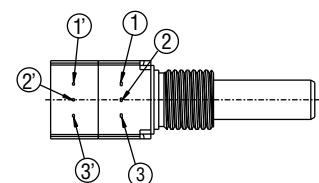


Switch Configuration



SPDT

Terminal Layout



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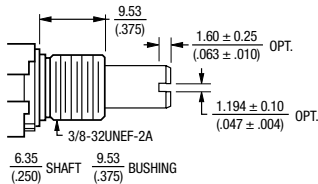
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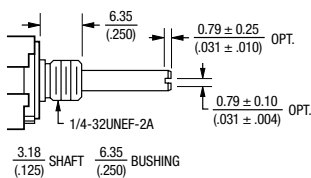
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Shaft/Bushing Styles



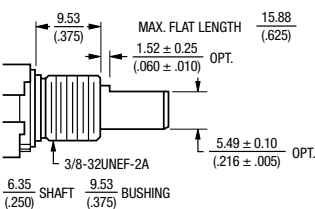
A Style Bushing

| STD. LENGTH 'L' |
|-----------------|
| .750 (19.05) |
| .875 (22.23) |



C Style Bushing

| STD. LENGTH 'L' |
|-----------------|
| .750 (19.05) |
| .875 (22.23) |



A Style Bushing - Flatted Shaft

| STD. LENGTH 'L' |
|-----------------|
| .750 (19.05) |
| .875 (22.23) |

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

How To Order

| | | | | | | | | | | | | |
|----|---|---|---|---|---|----|---|---|----|---|-----|---|
| 56 | A | A | D | - | C | 28 | - | B | 15 | / | R81 | L |
|----|---|---|---|---|---|----|---|---|----|---|-----|---|

ANTI-ROTATION LUG / BRACKET OPTION

| Code | Description |
|------|------------------------|
| A | AR Lug 90 °CW |
| D | No AR Lug or Bracket |
| L | Front Bracket |
| N | Front and Rear Bracket |

NO. OF SECTIONS

| Code | Description |
|------|--------------------|
| A | Single plus Switch |

BUSHING DESIGNATOR

| Code | Description |
|------|----------------------------|
| A | 3/8 " D x 3/8 " L Threaded |
| C | 1/4 " D x 1/4 " L Threaded |

MODEL

| Code | Description |
|------|------------------------------|
| 56 | PC Terminals w/Rotary Switch |

RoHS IDENTIFIER

| Code | Description |
|------|-------------|
| L | Compliant |

SWITCH OPTION

| Code | Description |
|------|-------------|
| R80 | SPDT CW |
| R81 | SPDT CCW |

RESISTANCE CODES

| Code | Value in Ohms |
|------|---------------|
| 10 | 1K |
| 13 | 5K |
| 15 | 10K |
| 18 | 50K |
| 20 | 100K |
| 22 | 250K |
| 23 | 500K |

ELEMENT TAPER TYPE/TOLERANCE

| Code | Description |
|------|-------------------|
| B | Linear CP ±20 % |
| E | Linear CP ±10 % |
| D | CW Audio CP ±20 % |
| S | CW Audio CP ±10 % |

SHAFT LENGTH DESIGNATOR

| Code | Description |
|------|----------------|
| 24 | 3/4 " FMS Long |
| 28 | 7/8 " FMS Long |

SHAFT STYLE

| Code | Description | AVAILABLE ONLY WITH BUSHING Code |
|------|---------------------|----------------------------------|
| B | 1/4 " D Slotted End | A |
| C | 1/4 " D Flatted End | A |
| E | 1/8 " D Slotted End | C |

Boldface features are Bourns standard options. All others are available with higher minimum order quantities.

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